NOTE XII.

FRESH AND BRACKISH WATER FISHES FROM SUMBA, FLORES, GROOT-BASTAARD, TIMOR, SAMAOE AND ROTTI.

BY

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Among the zoological collections, made by Dr. H. ten Kate during his travels in the Malay Archipelago, which are now preserved in the Leyden Museum, are many fishes caught in fresh and brackish water. As it is a rare fact to become fishes from the above mentioned islands, I venture to give an enumeration of the different species; so this list will especially be a contribution to the knowledge of the geographical distribution of fishes in the East Indian Archipelago.

The total number of fishes collected is 133, that of the species 15.

A. Fishes from Sumba.

a. NEIGHBOURHOOD OF MELOLO.

1. *Ambassis Commersonii* C. V.

Günther, Cat. of Fishes, T. I, p. 223.
Bleeker, Atlas Ichthyologique, T. VIII, p. 136, tab. 352, fig. 1.
Day, Fishes of India, p. 52, pl. 15, fig. 3.

N°. 5091 [1]). 1 Ex. Length 65 mM.

1) This and the following numbers indicate the bottles in the collection.

Coloration: yellow with a purple resplendence; a bright silvery band from the orbit to the centre of the caudal fin. Opercle silvery, eye with a black spot at the upper edge. Interspace between the second and third dorsal spine blackish.

Sub N°. 5140 are preserved the 8 ex., mentioned by Dr. Bleeker in his Atlas Ichthyologique; yet these specimens are much faded.

It may be observed here, that, after Bleeker's death, the Leyden Museum bought in 1879 the whole collection, made by this eminent ichthyologist for his own study. Together with the fishes, he formerly sent to the Leyden Museum, these collections were the base for all his ichthyological treatises, especially for his »Atlas Ichthyologique des Indes Orientales Néerlandaises". So it is obvious, that all the specimens from Bleeker's collections, representing species founded by him, are typical ones.

2. *Anabas scandens* (Dald.).

Günther, Cat. of Fishes, T. III, p. 375.
Bleeker, Atlas Ichthyologique, T. IX, tab. 395, fig. 2; tab. 396, figs. 2 and 3.
Day, Fishes of India, p. 370, pl. 78, fig. 3.

N°. 5153. 6 Ex. Length 65—90 mM.

Except these and the afterwards enumerated 63 ex. from the collections of ten Kate, the Leyden Museum possesses a series of 115 ex. of *A. scandens* (length 32—185 mM.). The number of scales in the lat. l. is in all these 30, sometimes 31, never less. Concerning the form of the body, there is some variation in the proportion between the height of the body and the total length. In intact examples I found the total length varying between the limits 4.3 and 3.06 × greatest height.

I agree with Bleeker, when he says (Mém. sur les poissons à pharyngiens labyrinthiformes, p. 9, Nat. Verh. Kon. Ak. Amst., T. XIX) that the black dot on the base of the caudal fin, and the black transverse streaks on the

body form no specific characters, as they are present in all stadia of distinctness.

Concerning Bleeker's *A. microcephalus*, the type of which is preserved in our Museum sub N°. 5161, I must mention, that the proportion, between the length of the head and the total length, is so little different from that in ex. of *A. scandens* of the same dimension, that I place *A. microcephalus* to the synonymy of *A. scandens*. Bleeker already founded his species with reservation.

If, to distinct the species of *Anabas*, we take as principal specific characters 1°. the number of scales on the lat. l. and 2°. the proportion between the greatest height and the total length of the body, I must mention here an *Anabas*-specimen, found by me in a bottle with 93 ex. of *A. scandens* from the Malay Archipelago, and quite different so from *A. scandens* as from *A. oligolepis* Blkr. I propose to establish on this ex. a new species:

Anabas elongatus, n. sp.

N°. 5162. 1 Ex. Length 104 mM.

Specific characters: scales on the lat. l. 30; greatest height of the body one fifth of the total length and situated in a vertical level drawn through the upper edge of the gill-openings; from here to the cauda the body becomes gradually more slender. Width of head 19 mM., height 20 mM. Diameter of eye 7.5 mM. Whilst the spines at the lower edge of the praeoperculum are very distinct, they want from here to the middle, where they are present again. No characteristic colours or any streaks or dots, but it must be mentioned, that our specimen was at least 20 years preserved in spirits.

Hab. Malay Archipelago.

When in more than 170 ex. of *A. scandens* the total length never surpasses 4.3 × the greatest height of the body, it is in *A. elongatus* 5 × g. h.

When in *A. scandens* the greatest height of the head is

considerably greater than the width, it is in *A. elongatus* nearly the same.

When in *A. scandens* the greatest height of the body is situated in a vertical level drawn through the anal-opening, it is in *A. elongatus* situated just behind the head.

The diameter of the eye is much greater than that in ex. of *A. scandens* of the same and even of greater size.

A third known East Indian species of *Anabas*, *A. oligolepis* Blkr., is characterized by a smaller number of scales on the lat. l., namely 27. Of this species the Leyd. Mus. possesses:

N°. 5160.	9 Ex. Bandjermasin.	Coll. Bleeker. Types.
N°. 1582.	1 Ex. Borneo.	Coll. Schwaner.
N°. 1588.	1 Ex. Bengal.	Coll. Frank, 1840.

3. *Hippocampus guttulatus* Cuv.

Günther, Cat. of Fishes, T. VIII, p. 202.
Day, Fishes of India, p. 682, pl. 174, fig. 6.

N°. 5163. 2 Ex.

Coloration: light brown, marbled with darker on the back; all parts with numerous small black and white dots.

The following ex. are to be found in the Leyd. Mus.

N°. 3916. 4 Ex. Cap. Coll. v. Horstock.

N°. 3917. 3 Ex. Adriatic sea. Coll. Feldegg. Very distinct white spots (»as in the Scopelinae" see Kner, Novara-Reise, Pisces, p. 391) and filaments on the head.

N°. 3918. 3 Ex. Anc. Cabinet.

N°. 3919. 4 Ex. Adriatic sea. Coll. Michahelles.

N°. 3920. 4 Ex. Sumatra. Coll. S. Müller.

N°. 3922. 1 Ex. Timor. Coll. S. Müller.

N°. 5165. 5 Ex. Sea of Amboina. Coll. Bleeker. Types of *H. melanospilos* Blkr.

N°. 5166. 3 Ex. East coast of Flores. Coll. Bleeker. Types of *H. polytaenia* Blkr.

N°. 5167. 33 Ex. East Indian Archipelago. Coll. Bleeker. Incl. the types of *H. kuda* Blkr.

b. RIVERS BETWEEN MENGILI AND WASANG.

4. *Dules rupestris* (Lacép.).

Günther, Cat. of Fishes, T. I, p. 268, nec *maculatus* C. V.
Bleeker, Atlas Ichthyologique, T. VII, p. 121, tab. 339, fig. 2.

N°. 5169. 5 Ex. Length 51—132 mM.

The black dots on the centre of the scales and those on the lower and upper part of the caudal fin are very distinct.

Except these are to be found in the Leyden collections:
N°. 326. 1 Ex. Java. Coll. Kuhl and v. Hasselt.
N°. 4419. 1 Ex. Madagascar. Coll. Pollen and v. Dam.
N°. 5168. 6 Ex. Timor and Amboina. Coll. Bleeker.

5. *Dules marginatus* C. V.

Günther, Cat. of Fishes, T. I. p. 268.
Bleeker, Atlas Ichthyologique, T. VII, p. 120, tab. 316, fig. 1, nec *Perca ciliata* K. et v. H. nec *Percichthys ciliata* Günther nec *Kuhlia ciliata* Gill.
Day, Fishes of India, p. 67, pl. 18, fig. 1.

N°. 5170. 1 Ex. Length 117 mM.

Day, in describing this species, gives the following remark: »*Perca ciliata* (K. et v. H.) C. V. = *Percichthys* »*ciliata* (C. V). Günther = this species according to Bleeker."

Bleeker, in his treatise »Sur le genre *Moronopsis* Gill »(*Paradules* Blkr.) et les espèces Indo-Archipélagiques, »Arch. Néerl. d. Sc. Ex. et Nat., T. VII," as well as in his Atlas Ichthyologique, considers *Perca ciliata* (K. et v. H.) C. V. synonymous with *Dules marginatus* C. V.

Sub N°. 328 is preserved in our collection the type of *D. marginatus* C. V., collected by Kuhl and v. Hasselt in Java. The specimen is long 122 mM., according with the »4$^1/_2$ pouces" of Cuvier et Valenciennes. With this ex. the following specimens, together with the above mentioned N°. 5170, correspond:
N°. 327. 1 Ex. Borneo. Coll. S. Müller.

N°. 5065. 1 Ex. Waai-Soena, Boercœ. Coll. Hoedt, 1864.
N°. 5066. 1 Ex. Amboina. Coll. Teysmann, 1877.
N°. 5171. 35 Ex. Indian Archipelago. Coll. Bleeker.

The fish (N°. 1029, Java, Coll. Kuhl and v. Hasselt), taken by Bleeker for *Perca ciliata* (K. et v. H.) C. V., and confirmed by his own handwriting »*Paradules*" on the label of the bottle, is no *Dules* and does not accord with the measurement given by of C. and V. Therefore I can not adhere to Bleeker's opinion, when he considers *P. ciliata* syn. with *D. marginatus*.

Gill nor Günther having seen the type of Kuhl and v. Hasselt, their determination shall remain undecided.

Characters of the specimen N°. 1029 are: D. 11—11, A. 3—8. Distinct canines. Last dorsal spine shorter than the forelast spine and the first soft ray. No scales on the base of the dorsal fin as in *Dules*. Operculum with two points, praeoperculum serrated, praeorbital smooth. Branchiostegals 7. The ex. is very faded, but I suppose it had a uniform coloration without streaks or dots on body or fins.

6. *Gobius giuris* Ham. Buch.

Günther, Cat. of Fishes, T. III, p. 21 (p. 45, *G. spectabilis?*).
Day, Fishes of India, p. 294, pl. 66, fig. 1.

N°. 5172. 1 Ex. Length 96 mM.
N°. 5173. 1 Ex. Length 280 mM.

I am in doubt whether Günther's *G. spectabilis* is synonymous with *G. giuris* H. B., as is the conclusion of Day. The principal character, given by Günther for his species, is the great length of the caudal fin ($^1/_4$ of the total), whilst he says: »Dorsal fins higher than the body, the »spines of the first are produced into filaments".

Ex. N°. 5172 has a total length of 96 mM., caudal fin 20 mM., 2d highest dorsal ray equals the height of the body.

Ex. N°. 5173 has a total length of 280 mM., caudal fin 70 mM., 2d highest dorsal ray, with long filament, 50 mM., height of the body 38 mM.

So we see there is a great difference in the proportion of these measurements in one and the other. In both animals the upper half of the body is dark, the lower half light brown, along the sides 5 black dots and 2 or 3 on the back; the vertical fins are dotted.

Sub N°. 5174. we possess 63 ex. from the East Indian Archipelago, determined by Bleeker as *G. celebicus* C. V. (after Day, p. 289, *G. celebicus* syn. with *G. biocellatus* C. V., but after Günther it is syn. with *G. giuris*, which is also my opinion). One of them, A, with a total length of 118 mM., has the caudal fin 29 mM., the 2d highest dorsal ray, with short filament, $15^1/_2$ mM. and the height of the body 16 mM.

Bottle N°. 5175 contains 25 ex. from the East Indian Archipelago, determined by Bleeker as *G. giuris* C. V. Among them I found a specimen, B, with the following measurements: total length 117 mM., caudal fin 29 mM., 2d highest dorsal ray, with long filament, 22 mM., height of the body 14 mM.

The width of the interorbital space in A is 5 mM., in B $2^1/_2$ mM., that of the head in A 18 mM., in B 13 mM. The enlarged teeth in both jaws are in B greater than in A.

Bottle N°. 5176 contains 45 ex., also from East Indian waters and determined by Bleeker as *G. catebus* C. V. The following are some measurements of large specimens:

Tot. length.	Caud fin.	2d highest dors ray w. long. fil.	Height of the body.	Interorbital space.
C. 310 mM.	73 mM.	62 mM.	35 mM.	12 mM.
D. 260 "	62 "	49 "	37 "	9 "
E. 256 "	60 "	broken off.	34 "	8 5 "
F. 240 "	55 "	30 mM. (short filament)	29 "	8 "

Except the here enumerated 135 ex. are still to be found in our collections:

N°. 1871. 1 Ex. Java. Coll. Kuhl and v. Hasselt.

N°. 1892. 1 Ex. Macassar. Coll. Piller, 1849.

N°. 1893. 1 Ex. Borneo. Coll. Schwaner, 1846.

N°. 2053. 2 Ex. Borneo. Coll. Schwaner, 1846.

N°. 3941. 4 Ex. Madagascar. Coll. Pollen and v. Dam.

As I mean, that the last word in this question is not yet spoken, I have given this abridgement of the enorm material (a total of 143 ex.) in the Leyden Museum and the few remarks on some individuals, in the firm expectation, that the ichthyologist, who in future will make the so desired; more elaborated monograph of the *Gobiidae*, than that of Bleeker (Arch. Néerl. 1874, T. IX, p. 289), shall use in the first place the Leyden collections.

I agree with Günther (T. III, p. 23) that *G. unicolor* K. et v. H. is a distinct species; the type-specimen is preserved in the L. M. sub N°. 1819.

7. *Eleotris aporos* Blkr.

Günther, Cat. of Fishes, T. III, p. 109.

N°. 5177. 1 Ex. Length 155 mM.

The type-specimens of this species, founded by Bleeker (see Nat. Tijds. Ned. Ind., T. VI, p. 59), are preserved sub N°. 5178, 6 ex. Sindangole, Halmaheira.

8. *Eleotris Hoedtii* Blkr.

Günther, Cat. of Fishes, T. III, p. 110.

N°. 5179. 2 Ex. Length 138 and 157 mM.

Sub N°. 5180 are preserved 17 ex. from East Indian waters, Coll. Bleeker; among them the type of the species, from Amboina, long 161 mM. (see Nat. Tijds. Ned. Ind., T. VI, p. 496).

After Bleeker (Versl. Kon. Ak. Wet. Amst. 1877. 2de Reeks, T. XI, p. 27) *E. aporos* and *E. Hoedtii* belong to the genus *Ophiocara* Gill (Proc. Ac. nat. Sc. Philad., 1863, p. 270), as well as *E. ophiocephalus* K. et v. H. (type sub N°. 2052) and *E. porocephala* C. V.

9. *Eleotris fusca* (Bl. Schn.).

Günther, Cat. of Fishes, T. III, p. 125.
Day, Fishes of India, p. 313, pl. 65, fig. 7.

N°. 5181. 5 Ex. Length 75—125 mM.
In the Leyden collections are moreover preserved:
N°. 2049. 1 Ex. Andamans. Coll. Day, 1876.
N°. 2050. 1 Ex. Calcutta. Coll. Day, 1876.
N°. 3949. 2 Ex. Madagascar, Samberano-riv. Coll. Pollen and v. Dam.
N°. 5182. 50 Ex. (Length 35—137 mM.). East Indian waters. Coll. Bleeker.

B. **Fishes from Flores.**

a. MAUMERI (EAST-FLORES).

1. *Eleotris fusca* (Bl. Schn.).

N°. 5183. 1 Ex. Length 50 mM.

b. LARANTOEKA (EAST-FLORES).

2. *Ophichthys colubrinus* (Bodd.).

Günther, Cat. of Fishes, T. VIII, p. 81.
Bleeker, Atlas Ichthyologique, T. IV, p. 61, tab. 165, fig. 1.
Day, Fishes of India, p. 665, pl. 168, fig. 4.

N°. 5184. 1 Ex. Length 323 mM.

Coloration: 24 brown rings, alternating with narrower, white, at the upper half brownish ones. Snout white. On the 3, 4, 5, 13, 14, 15, 16, 17, 18, 19, 22, 23 and 24 brown ring a white dot at the dorsal side.

Besides this specimen, in the Leyden collections are preserved:
N°. 3703. 1 Ex. juv. Moluccas. Coll. Forsten, 1844.
N°. 3704. 1 Ex. Timor. Coll. S. Müller.
N°. 3767. 1 Ex. Timor. Coll. S. Müller.

N°. 3839. 1 Ex. Ternate. Coll. Bernstein, 1861.
N°. 4389. 1 Ex. Nossi-Bé (Island N.W. of Madagascar). Coll. Pollen and v. Dam.
N°. 5047. 1 Ex. Wahaay (N. E. coast of Ceram). Coll. Moens, 1862.
N°. 5185. 5 Ex. East-Indian waters. Coll. Bleeker.

C. Fishes from Groot-Bastaard.

1. *Eleotris fusca* (Bl. Schn.).

N°. 5186. 18 Ex. juv. Length 35—65 mM.

2. *Anguilla bengalensis* (Gray).

Günther, Cat. of Fishes, T. VIII, p. 27.
Bleeker, Atlas Ichthyologique, T. IV, p. 9, tab. 145, fig. 2.
Day, Fishes of India, p. 659, pl. 168, fig. 1.

N°. 5187. 10 Ex. juv. Length 45—77 mM.
In the collections of the Museum are preserved:
N°. 3664. 1 Ex. Macassar. Coll. Piller.
N°. 3740. 1 Ex. Java. Coll. Kuhl and v. Hasselt.
N°. 5188. 9 Ex. and 1 skin. East-Indian waters. Coll. Bleeker. (Length of skin, without head, 870 mM.).

D. Fishes from Timor.

a. NEAR AMARASSI.

1. *Anabas scandens* (Dald.).

N°. 5189. 46 Ex. Length 43—140 mM.

b. LAKE NEFKO NEAR OIKABITI.

2. *Anguilla bengalensis* (Gray).

N°. 5190. 2 Ex. Length 385 and 625 mM.

c. LAKE NEAR BAUN.

2. *Anguilla bengalensis* (Gray).

N°. 5191. 1 Ex. Length 200 mM.

E. Fishes from Samaoe.

1. *Salarias edentulus* (Bl. Schn.).

Günther, Cat. of Fishes, T. III, p. 252.

N°. 5192. 2 Ex. Length 53 and 78 mM. Caught in brackish water.

Sub N°. 4790 are preserved 7 ex. from the Malay Archipelago, coll. Bleeker.

2. *Salarias Oortii.* Blkr.

Günther, Cat. of Fishes, T. III, p. 257.

N°. 5193. 4 Ex. Length 30, 34, 47 and 56 mM.

The first description, given by Bleeker (Nat. Tijds. Ned. Ind., 1851, T. I, p. 257) is made after a sketch, left by Kuhl and v. Hasselt. The second description (Acta Soc. Sc. Ind. Neerl., 1857—58, T. III, 6de Bijdrage tot de vischfauna van Sumatra, p. 39) is taken after 7 ex. from Trussan, w. c. of Sumatra. These types are, with 9 other ones, preserved in the Leyd. Mus. sub N°. 4791.

F. Fishes from Rotti.

a. LAKE DANAU-NALUK.

1. *Ambassis Commersonii* C. V.

N°. 5194. 1 Ex. Length 87 mM.

2. *Eleotris fusca* (Bl. Schn.).

N°. 5195. 2 Ex. Length 46 mM. each.

3. *Amblyopus* spec.?

N°. 5196. 1 Ex. very young and in bad condition. Length 74 mM.

4. *Anabas scandens* (Dald.).

N°. 5197. 14 Ex. Length 52—110 mM.

5. *Anguilla bengalensis* Gray.

N°. 5198. 4 Ex. Length 295, 405, 410 and 430 mM.

b. NEAR BAÄ.

6. *Echeneis lineata* Menz.

Günther, Cat. of Fishes, T. II, p. 382.
Poey, Memorias sobre la Historia [nat.] de Cuba. T. II, pp. 254 and 255.
Lutkén, Vid. Meddel. fra de naturh. Forening Kjøbenhavn, 1875, p. 36.

N°. 5199. 1 Ex. Length 385 mM.

11 Laminae on the disk. Maxilla inferior produced. Pectoral, anal and dorsal with white margins. The middle rays of the caudal fin longest, the outer somewhat produced. Upper half of the body bluish black, lower half white; on the left side some remainders of a white streak from the base of the pectoral fin to the cauda.

Sub N°. 3647 is preserved another ex., from the North sea, with 10 laminae. Coloration the same as in N°. 5199, though faded. The outer caudal rays much produced. Total length 550 mM.

Before finishing this enumeration, I must return many thanks to Prof. Max Weber at Amsterdam for his kindness in determining some of the species.

Leyden, July 1894.